

CLAIMS

1. A structural element (1), particularly a hybrid structural element, for a cross member of a vehicle, comprising a base body (2) at least partially lined with plastic (4), which is provided with at least one flow tap (8a to 8e), in conjunction with which the base body (2) is provided, in the area of the flow tap (8a to 8e), with a flow-guiding means (9).

5 2. The structural element as claimed in claim 1, in which the flow-guiding means (9) is executed as a smoothing element (11).

10 3. The structural element as claimed in claims 1 or 2, in which the flow-guiding means (9), in particular the smoothing element (11), is executed 20 as a plastic structure (K) of varying thickness.

15 4. The structural element as claimed in claim 3, in which the plastic structure (K) exhibits a thickness of 0.1 mm to 10 mm.

25 5. The structural element as claimed in claims 3 or 4, in which the plastic structure (K) is executed, at least partially, in a multi-layered fashion, and in particular from a combination of hard and 30 soft layers.

35 6. The structural element as claimed in any one of claims 3 to 5, in which the smoothing element (11) is formed by an arched thickening of the plastic structure (K).

7. The structural element as claimed in any one of claims 1 to 6, in which the flow-guiding means (9) is executed as a deflection element (10).

8. The structural element as claimed in any one of claims 1 to 7, in which the deflection element (10) extends from a layer of plastic on the inner wall in the form of an arc into the cavity of the base body (2).  
5
9. The structural element as claimed in claims 7 or 8, in which the deflection element (10) is executed separately and is joined to the plastic layer.  
10
10. The structural element as claimed in any one of claims 7 to 9, in which the deflection element (10) is executed in a single piece with the plastic lining.  
15
11. The structural element as claimed in any one of claims 7 to 10, in which a plurality of deflection elements (10) are arranged parallel next to one another viewed in the longitudinal direction.  
20
12. The structural element as claimed in any one of claims 1 to 11, in which the flow-guiding means (9) is executed as a combined guiding and reinforcing element (12).  
25
13. The structural element as claimed in claim 12, in which the combined guiding and reinforcing element (12) is formed by a channel element (14), a deflection element (10) arranged in the channel element (14), and at least one reinforcing element (16) supported by the channel element (14) against the base body (2).  
30
- 35
14. The structural element as claimed in claims 12 or 13, in which the channel element (14) exhibits a reducing cross section viewed in the direction of the flow tap (8a to 8e).

15. The structural element as claimed in any one of claims 12 to 14, in which the deflection element (10) extends from the channel element (14) in the form of an arc and closes this in the vicinity of the flow tap (8a to 8e) at the end of the combined guiding and reinforcing element (12) and discharges into an opening (O) in the base body (2).

10

16. The structural element as claimed in any one of claims 12 to 15, in which a plurality of reinforcing elements (16) are arranged in the form of transverse ribs in the cavity (H) formed between the channel element (14) and the base body (2).

15

17. The structural element as claimed in claim 16, in which the angle of the transverse ribs runs perpendicular to the channel (6) or obliquely at an angle of  $0^\circ$  to  $\pm 60^\circ$ .

20

18. The structural element as claimed in any one of claims 1 to 17, in which the flow-guiding means (9) is executed at least partially or completely separately and is capable of being introduced into the base body (2).

25

19. The structural element as claimed in any one of claims 1 to 18, in which a plurality of flow-guiding means (9), in particular a smoothing element (11), a deflection element (10) and/or a combined guiding and reinforcing element (12), are arranged in a single flow tap (8a to 8e).

30

20. The structural element as claimed in any one of claims 1 to 19, in which the flow-guiding means (9) discharges in the vicinity of the flow tap (8a to 8e) into an opening (O) in the base body (2).

35

21. The structural element as claimed in any one of claims 1 to 20, in which the base body (2) viewed in the longitudinal direction is provided with a plurality of flow taps (8a to 8e) situated at a distance from one another.  
5
22. The structural element as claimed in any one of claims 1 to 21, in which the base body (2) viewed in the transverse direction is provided with opposing flow taps (8a to 8e).  
10
23. The structural element as claimed in any one of claims 1 to 22, in which the base body (2) is provided at least partially with a plastic layer, and in particular is extrusion-coated or foam-coated.  
15
24. The structural element as claimed in any one of claims 1 to 23, in which the base body (2) is executed from a metal, a light metal or its alloys, and in particular aluminium, magnesium, titanium or refined steel, and exhibits a wall thickness from 0.4 mm to 2.0 mm.  
20
25. The structural element as claimed in any one of claims 1 to 24, in which the base body (2) exhibits a wall thickness that varies in different areas.  
25
30. 26. The structural element as claimed in any one of claims 1 to 25, in which the base body (2) is lined in areas with a material of varying wall thickness that has been caused to foam by physical or chemical means.  
35
27. Use of a structural element (1) as claimed in any one of claims 1 to 26 as an instrument panel supporting member in a vehicle with a channel (6),

in particular with at least one air guiding channel and/or a cable duct.

28. The use of a structural element (1) as claimed in  
5 any one of claims 1 to 26 as a cross member in a vehicle, in particular as a cross member between the A-pillars of a vehicle or as a front-end structural member.
- 10 29. The use of a structural element (1) as claimed in any one of claims 1 to 26 as a structural element in a vehicle, in particular as a hollow structural element, as a longitudinal member, sill, center tunnel structure, front, side or transverse member, vertical structural element, A-, B-, C-, 15 D-pillar, or roof structural element.
- 20 30. The use of a structural element as claimed in any one of claims 1 to 26 as a structural element in a vehicle, in particular as a hollow structural element, through which the air for a heating, cooling, air conditioning or ventilation device is conducted.